REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1, 2 and 4-9 are pending in this application. No claim amendments are presented, thus, no new matter is added.

In the outstanding Office Action, Claims 1, 2, and 5-7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Segura et al. (U.S. Patent No. 6,360,076, hereinafter "Segura") in view of Hsu et al. (U.S. Pub. No. 2003/0054807, hereinafter "Hsu"); and Claims 4 and 8-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Segura in view of Hsu and in further view of Takeo (U.S. Patent No. 6,385,183).

The undersigned appreciatively acknowledges the courtesy extended by Examiner Fotakis by holding a personal interview with the undersigned on December 19, 2007. During the interview, an overview of the invention was presented, and differences between the pending independent claims and the applied references were discussed. No agreement was reached during the interview pending the formal submission of a response to the outstanding Office Action.

In the outstanding Office Action, Claims 1, 2, and 5-7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Segura in view of Hsu. Applicants respectfully traverse this rejection, as independent Claims 1, 2 and 7 recite novel features clearly not taught or rendered obvious by the applied references.

Independent Claim 1 relates to a mobile communication system which carries out multicast communication by a radio station and a plurality of mobile stations belonging to a specific multicast group. Each of the plurality of mobile stations comprises a communication quality measurer configured to measure a communication quality of a signal transmitted from the radio station. The radio station is configured to:

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...acquire the communication quality from each of the
plurality of mobile stations belonging to the specific multicast
group;

...determine a number of transmission signal repetitions
by the multicast communication, in accordance with the
acquired communication quality;

...select the lowest communication quality from among
the acquired communication qualities, and

...determine the number of transmission signal
repetitions in accordance with the selected lowest
communication quality.

Independent Claims 2 and 7, while directed to alternative embodiments, recite substantially similar features. Accordingly, the remarks and arguments presented below are applicable to each of independent Claims 1, 2 and 7.

The Office Action cites Segura as disclosing Applicants' invention with the exception of the features directed determining a number of transmission signal repetitions by the multicast communication, in accordance with the acquired communication quality, and transmitting the signal to the plurality of mobile stations using the determines number of signal repetitions. In an attempt to cure these deficiencies, the outstanding Office Action relies on Hsu and asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the cited references to arrive at Applicant's claims. Applicants respectfully traverse this rejection as neither Segura nor Hsu disclose the features for which each is relied upon under 35 U.S.C. § 103.

Segura, the primary reference, relates to a method and a radio telecommunications network of broadcasting data in an over-the-air multicast to a group of mobile terminals.[1] Segura's method uses statistical data indicating the optimal signal quality that users normally experience when operating in a cell. From this data, a minimum transmission quality (TQmin) that a mobile terminal must receive for the type of data being broadcast is determined, the mobile station then broadcasts a test transmission to the mobile terminals,

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[1] Segura, Abstract.

and includes a maximum transmission quality (TQmax) in order to <u>limit the number of</u>

<u>responses</u>. A response is then received from <u>a mobile terminal representative of the group</u>,

the response including an indication of the received transmission quality.

More specifically, <u>Segura</u> describes that the base station 10 acquires a transmission

quality (tq) of a broadcast signal received at the mobile terminal from the base station 10. As

described at col. 6, ll. 40-44, only the terminals receiving the broadcast with a tq less than

TQmax, send responses to the base station reporting the transmission quality. The base

station 10 then begins the multicast once the transmission quality tq greater than the

minimum transmission quality TQmin is reported by a mobile station, without considering

transmission qualities tq reported from other mobile terminals receiving the broadcast signal

having a transmission quality tq less than the maximum transmission quality TQmax.[2]

Thus, <u>Segura</u> describes that the base station 10 begins the multicast, once a

transmission quality tq greater than the minimum transmission quality TQmin is reported,

even if <u>the reported transmission quality tq is not the lowest quality among the transmission</u>

<u>qualities tq reported from mobile terminals</u>.

Therefore, <u>Segura</u> fails to teach or suggest that the base station "*selects the lowest*

communication quality from among the acquired communication qualities," and

determines the number of transmission signal repetitions in accordance with the selected

lowest communication quality, as recited in Claim 1.

<u>Hsu</u>, the secondary reference describes a base station providing broadcast and

multicast services (BCMCS). More particularly, paragraph [0084], ll. 12-13 of <u>Hsu</u> describes

that the number of repetitions is configurable using a simple repetition scheme 304 or a cyclic

repetition scheme 306, and paragraph [0082] of <u>Hsu</u> describes that multiple transmissions of

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[2] <u>Id</u>., col. 6, l. 66-col. 7, l. 12 and Fig. 3, steps 37-43.

the same BCMCS data frame is performed in accordance with the predetermined number of repetitions.

Hsu, however, fails to teach or suggest determining "a number of transmission signal repetitions by the multicast communication, *in accordance with the selected lowest communication quality*," as recited in independent Claim 1.

In addressing the above-noted features recited in Claim 1, the Office Action relies on paragraph [0082] of Hsu. This cited portion of Hsu describes a repetition scheme capable of improving an overall frame error rate exhibited during effectuation of a broadcast/multicast service (BCMCS). Hsu describes that if the mobile station has no active reverse link transmission while monitoring the broadcast, no protocols are available by which the mobile station can respond to the base station. Thus, BCMCS data is likely to be transmitted at a constant transmit power as no mobile station channel quality indicator (CQI) report is provided. If the power budgeted is not enough for a desired quality-coverage level, multiple transmissions of the same BCMCS data frame may be implemented.

Thus, Hsu clearly describes that his method of transmitting the same BCMCS data frame multiple times is based on a situation in which a mobile station is idle and is not capable of responding via a reverse link to acknowledge the reception of a message or to report a CQI. Therefore, the resultant multiple transmissions of the same BCMCS data frame is not based on *an acquired communication quality*, much less a *selected lowest communication quality* acquired from the plurality of mobile stations. Instead, Hsu's system is directed to repeating data frame transmissions to increase the chances that an idle mobile station successfully receives BCMCS data transmission.

Hsu, therefore, clearly fails to teach or suggest that his base station determines "a number of transmission signal repetitions by the multicast communication, *in accordance with the selected lowest communication quality*," as recited in Claim 1.

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Therefore, Segura and Hsu, neither alone, nor in combination, teach or suggest a communication system including a radio station configured to "acquire the communication quality from *each of the plurality of mobile stations* belonging to the specific multicast group... *select the lowest communication quality* from among the acquired communication qualities, and...determine the number of transmission signal repetitions *in accordance with the selected lowest communication quality*," as recited in independent Claim 1.

Accordingly, Applicants respectfully request that the rejection of Claim 1 under 35 U.S.C. § 103 be withdrawn. For substantially similar reasons, it is also submitted that independent Claims 2 and 7 (and the claims that depend therefrom) patentably define over Segura and Hsu.

Claims 4 and 8-9 were rejected under 35 U.S.C. §103(a) as unpatentable over Segura in view of Hsu and Takeo. Applicants respectfully traverse this rejection, as independent Claims 4, 8 and 9 recite novel features clearly not taught or rendered obvious by the applied references.

Claim 4 is directed to a radio station for carrying out multicast communication with a plurality of mobile stations belonging to a specific multicast group. The radio station is configured to:

> ...acquire... a communication quality of a signal transmitted *from the radio station to each of the plurality of mobile stations*;
> ...calculate an average value of the communication qualities acquired from the plurality of mobile stations, and
> ...determine the number of transmission signal repetitions in accordance with a difference between the calculated average value and a preset reference value.

Claims 8 and 9, while directed to alternative embodiments, recite substantially similar features. Accordingly, the remarks and arguments presented below are applicable to each of Claims 4, 8 and 9.

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The Office Action cites Segura and Hsu as disclosing Applicants' invention with the exception of the features directed to calculating an average value of the communication qualities acquired from the plurality of mobile stations, and changing the transmission method (i.e., number of transmission repetitions) in accordance with a difference between the calculated average value and a preset reference value. In an attempt to cure these deficiencies, the outstanding Office Action relies on Takeo and asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the cited references to arrive at Applicant's claims. Applicants respectfully traverse this rejection as Takeo fails to teach or suggest the claimed features for which it is asserted as a secondary reference under 35 U.S.C. § 103. Further, the remarks presented above regarding Segura and Hsu, are applicable for similar features for which they are relied upon to reject Claims 4 and 8-9.

Takeo describes a base station for performing a power control of CDMA signals. More specifically, col. 13, ll. 24-31 of Takeo describes that a calculator 350 in the base station calculates an average value, that is the current representative communication quality $SIR(t)$, of the current measured communication qualities $SIRm(t)$. Here, the current measured communication qualities $SIRm(t)$ are communication qualities of uplink radio signals received from mobile stations m (m=1...M) in a cell.[3] As described at col. 14, ll. 22-40, the base station 20 transmits the transmission power control signal which indicates the power difference between the calculated average value of the uplink radio signals $SIR(t)$ and a reference value SIR 0 in the base station 20, and the mobile station controls its transmission power in response to the received transmission power control signal.

Takeo, therefore, merely describes that the base station calculates an average value $SIR(t)$ of communication qualities of uplink radio signals transmitted from mobile stations.

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[3] Takeo, col. 11, l. 17-44.

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<u>Takeo</u> fails to teach or suggest "acquiring... a communication quality of a signal transmitted *from the radio station to each of the plurality of mobile stations*" and "calculating an average value of the communication qualities acquired from the plurality of mobile stations," as recited in independent Claim 4.

Further, <u>Takeo</u> describes that the base station performs a <u>power control of uplink signal</u> transmitted from mobile stations in accordance with a difference between the calculated average value SIR(t) and a reference value SIR 0, and further fails to teach or suggest "determining *the number of transmission signal repetitions* in accordance with a difference between the calculated average value and a preset reference value," as recited in independent Claim 4.

Therefore, <u>Segura</u>, <u>Hsu</u> and <u>Takeo</u>, neither alone, nor in combination, teach or suggest a radio station is configured to "acquire... a communication quality of a signal transmitted *from the radio station to each of the plurality of mobile stations*... calculate an average value of the communication qualities acquired from the plurality of mobile stations, and...determine the number of transmission signal repetitions in accordance with a difference between the calculated average value and a preset reference value," as recited in independent Claim 4.

Accordingly, Applicants respectfully request that the rejection of Claim 4 under 35 U.S.C. § 103 be withdrawn. For substantially similar reasons, it is also submitted that independent Claims 8 and 9 patentably define over <u>Segura</u>, <u>Hsu</u> and <u>Takeo</u>.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.
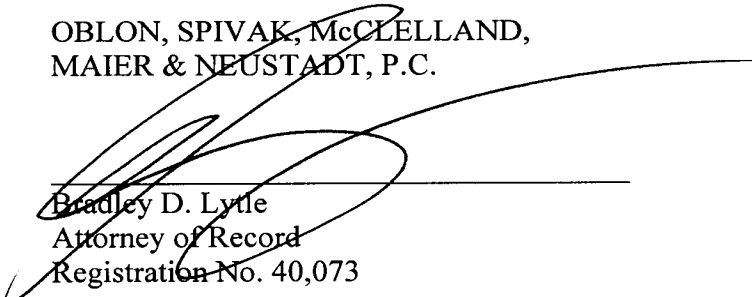
Respectfully submitted,

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